Onkotermes corochus, a New Species of Termite From Argentina (Isoptera, Termitidae, Termitinae)

by

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ABSTRACT

Onkotermes corochus n. sp. (Termitidae, Termitinae) was collected in xerophytic Chacoan forests at two localities of the Province of Chaco, Republic of Argentina. The description of the new species includes illustrations of the head of the soldier and worker, soldier mandibles and worker digestive tube. Biological data and the distribution map of the two species of *Onkotermes* in Argentina are given, and the generic diagnosis is complemented. Also, we present the first record of *O. brevicorniger* in an urban area (city of Cosquín).

INTRODUCTION

Amitermes brevicorniger was briefly described by Silvestri in 1901 (p. 4) and a complementary description was presented by the same author in 1903 (p. 45). This species was included in the new subgenus *Synhamitermes* described by Holmgren (1912: 91), which was ranked to generic level by Snyder (1949: 129), then including also *S. quadriceps* (Wasmann 1902), type species of *Synhamitermes*, from India and *S. ceylonicus* (Holmgren 1913) from Ceylon. A third oriental species was subsequently added, *S. colombensis* Roonwal & Sen-Sarma 1960 from Ceylon. Such artificial arrangement was noted by Araujo (1970: 534, 552; personnal comunication to L. R. Fontes in 1978), who suggested that a new generic assignment would be desirable for the single South American species, when specimens became available for study. Based on several new samples collected from 1999 to 2001 by two Argentinian researchers, Constantino (2002: 454, 456) created the genus *Onkotermes*, to accomodate the South American species, now *O. brevicorniger*.

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We here describe a new species from Argentina, *O. corochus*, the second species of the genus, present new distribution data for *O. brevicorniger* in Argentina and implement the generic diagnosis, based on the characteristics of the new species.

MATERIAL AND METHODS

Onkotermes corochus was discovered during a field trip to the Province of Chaco, in the course of a research project on the termite fauna of Argentina (PI 669, code 17/ F062, supported by the Secretaria General de Ciencia y Técnica, Universidad Nacional del Nordeste).

Type-material is deposited at the FACENAC (Isoptera Collection of the Facultad de Ciencias Exactas y Naturales y Agrimensura, Universidad Nacional del Nordeste, Argentina) and at the LRFC (L. R. Fontes collection, São Paulo, Brazil).

Morphometric characters presented in this work follow Roonwal (1970).

Onkotermes Constantino, 2002

Alate: Unknown.

Soldier: The mandibular blade is not necessarily strongly curved as in the original description and vary from slightly curved to strongly curved. The blade seems to be more curved in species with a longer mandibular blade.

Worker: The head of the worker can be rounded instead of trapezoidal. The worker gut pattern is particularly useful in the routine task of identification, since the soldiers commonly seem to be rarely collected in foraging groups, composed solely by hundreds of workers. The coiling of the gut components associated with a prominent mixed segment running forward (identified in ventral view), visible by transparency of the abdominal integument, enables the immediate identification of the workers.

***Onkotermes corochus* Fontes & Torales, new species**

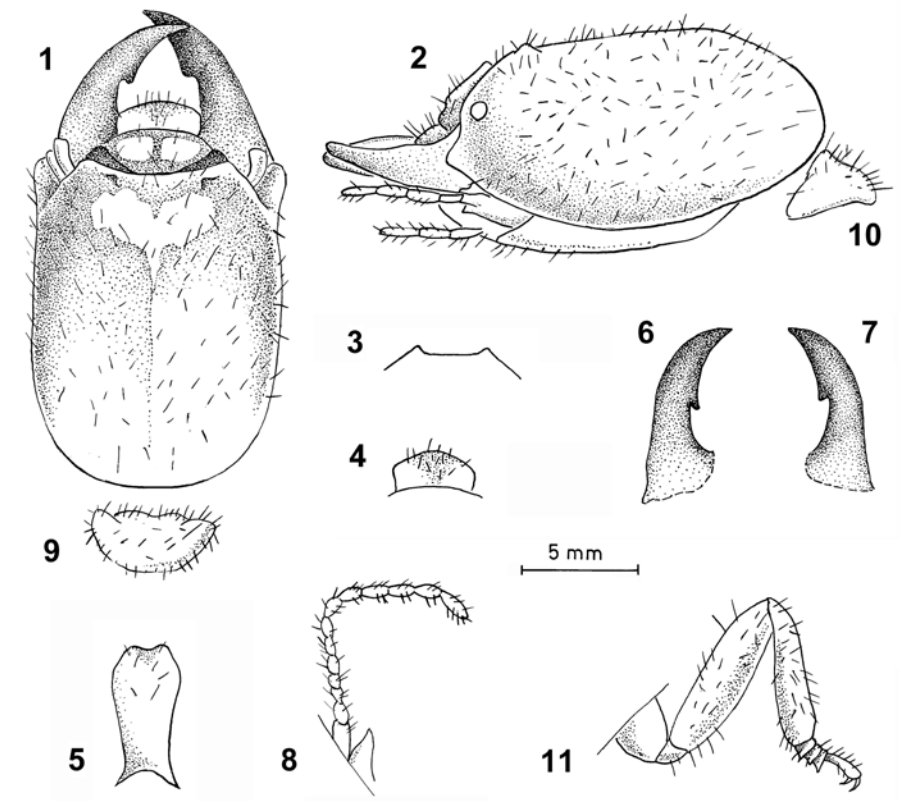
Figs. 1-14; 18-27

Synonymy: *Onkotermes* sp. a (Torales *et al*. 2008).

Etymology: From the Guarany native indian language, *corocha* means rugged, uneven, rough, grainy, lumpy. The name is a reference to the distinctive

frons of the soldier, with a wrinkled integument and a minute but evident knot on each side.

Soldier (Figs. 1-14): Head capsule yellow, with faint dark mottles dispersed overall; in dorsal view, frontal gland area anterior to fontanelle distinctly lighter, whitish-yellow. Postclypeus yellow, with almost indistinct median longitudinal line. Antennae and postmentum pale yellow. Labrum yellow with lighter apical third. Base of mandibles brownish-yellow; blades brown. Rest of body yellow-white. Head capsule, postclypeus and labrum with scattered long erect bristles; short erect bristles (shorter than the width of the antennal articles) are more numerous, spacing greater than their lengths. Postclypeus with sparse minute bristles. Pro-, meso- and metanotum, tergites



Figs. 1-11. *Onkotermes corochus*, n. sp., soldier. 1, dorsal view of head. 2, lateral view of head. 3, frontal view of frons. 4, labrum. 5, postmentum. 6, left mandible. 7, right mandible. 8, antennae. 9, dorsal view of pronotum. 10, lateral view of pronotum. 11, left foreleg.

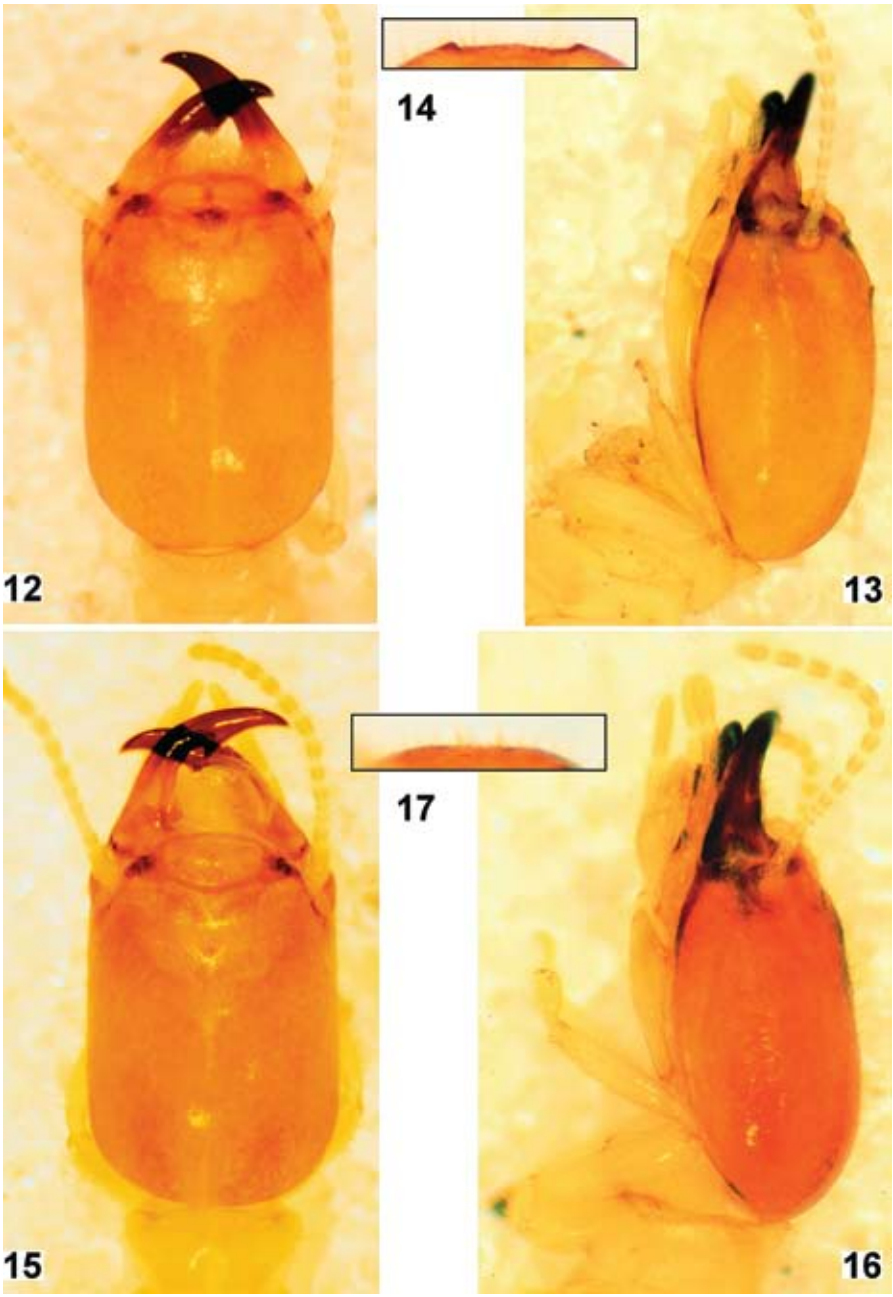
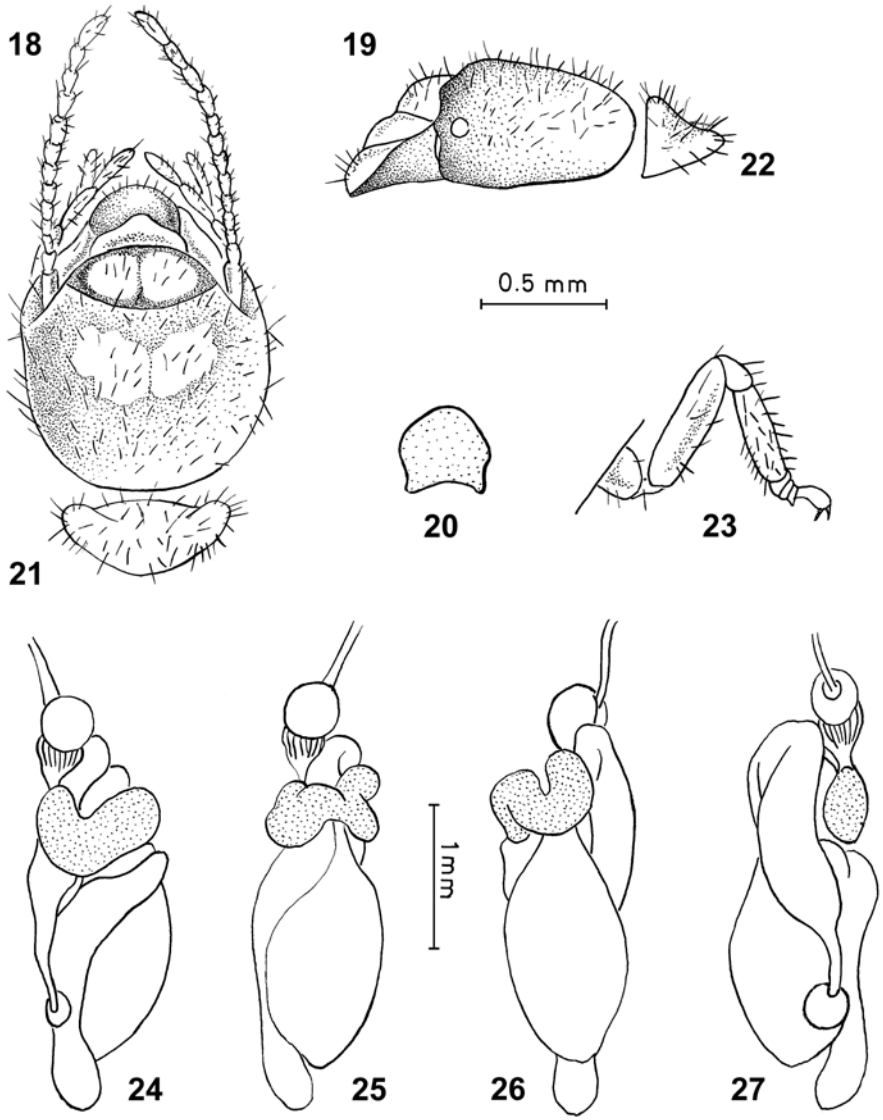


Fig.s 12-17. Head of soldiers of *Onkotermes corochus*, n. sp. 12, dorsal view. 13, lateral view. 14, frontal view of frons. *Onkotermes brevicorniger* (Silvestri 1901). 15, dorsal view. 16, lateral view. 17, frontal view of frons.

and sternites with many medium-length (about as long as the width of the antennal articles) erect bristles, spacing as long as or shorter than their lengths. Pronotum also with long bristles near margins; meso- and metanotum and tergites with an irregular row of long erect bristles near the posterior margin. Legs with long and short erect bristles; tibiae with 6 to 10 stout erect bristles on the posterior margin. Tibial spurs 3:2:2; the middle tibiae with 2 subapical spurs on the outer margin; one soldier (paratype) has an additional minute subapical spur on the outer margin of one hind tibia. Head capsule (Figs. 1, 12) subrectangular, about half as broad as long, slightly wider at the base of the mandibles; posterior angles broadly convex; hind margin straight (as in Fig. 1) to very slightly concave. In the frons (Figs. 2, 13), anteriorly to the fontanelle, there is a small but distinct pimple-like blob each side, easily recognized when the head is viewed from the frons (Figs. 3, 14). Between the blobs, the frons is slightly depressed and the integument is delicately, but distinctly, wrinkled and not shining; thus, in this region the integument differs from that of the rest of the head capsule, where it is delicately microsculptured but almost smooth and distinctly shining. Postclypeus (Figs. 2, 13) about half as long as broad, inclined at an angle of about 45°, anterior and posterior margins convex, and with a distinct median line; integument wrinkled and not shining, similarly to the frons between the blobs. Labrum (Fig. 4) subrectangular, with anterior margin broadly convex and lateral angles rounded. Postmentum (Fig. 5) elongated, widest at anterior third. Mandibles (Figs. 6-7) robust, slightly curved towards the apex; outer margin convex at apical third to almost straight at basal 2/3; each mandible has a distinct pointed marginal tooth directed backwards. Antenna (Fig. 8) with 13 articles; II subequal to VI; III narrower and shorter than the others, which gradually elongate toward the tip of the antennae. Pronotum (Figs. 9-10) broader than twice its length; lateral angles acutely rounded; anterior margin round and with a slight indentation in the middle; posterior margin broadly rounded and with an almost indistinct indentation in the middle. Abdomen slender, much longer than broad. Forelegs as in Figure 11.

Measurements of the 2 soldiers in millimeters (first measure refers to Holotype; second to paratype). Total length 4.25-4.50. Head: lateral length to side base of mandibles 1.40; length to apex of postclypeus 1.50-1.45; width 1.05-0.97; depth excluding postmentum 0.70-0.73. Postclypeus: length

0.25-0.20; width 0.50. Postmentum: length 0.65-0.66; width 0.30. Pronotum: length 0.25-0.26; width 0.60-0.65. Left mandible: length 0.73-0.75; width at apical tooth 0.10-0.13; length from apex to point of apical tooth



Figs. 18-27. *Onkotermes corochus*, n. sp., worker. 18, dorsal view of head. 19, lateral view of head. 20, labrum. 21, dorsal view of pronotum. 22, lateral view of pronotum. 23, left foreleg. Digestive tube: 24, dorsal; 25, right; 26, ventral; 27, left.

0.34-0.36. Pronotum: length 0.25-0.26; width 0.60-0.65. Anterior tibiae: length 0.55-0.57; width 0.15-0.13. Hind tibiae: length 0.75-0.73; width 0.10. Abdomen: length 2.0-3.1; width 0.90-1.00.

Worker (Figs. 18-27): Head and its appendices very pale yellow, the remainder of the body white; abdominal sclerites transparent, with gut contents showing through. Head with numerous, medium-length erect bristles (about as long as the width of the antennal articles), and scattered short bristles. Pronotum with medium-length erect bristles on the surface and longer erect bristles on the margins. Tergites and sternites with many medium-length erect bristles. Head (Fig. 18) with lateral margins almost parallel at anterior 2/3, converging towards the rear on posterior third; hind margin broadly rounded. Postclypeus (Figs. 18-19) moderately inflated, a little shorter than half its width. Antenna (Fig. 18) with 13 articles; II about as long as III and IV together, which are the narrowest; other articles broadening and enlarging slightly, gradually towards the apex. Pronotum (Figs. 21-22) similar to that of the soldier, except that the fore and the hind margins are not emarginated in the middle. Abdomen slender, much longer than broad. Gut (Figs. 24-27): gizzard anterior, in dorso-lateral position on the left side of the abdomen; mixed segment extending from the middle of the right side to ventral side of the abdomen, where its apex reaches the sagital line; enteric valve posterior, in dorso-lateral position on the left side of the abdomen.

Measurements of 2 workers in millimeters (one worker dissected and impossible to measure). Head: length to apex of postclypeus 0.73-0.85; width 0.80-0.90. Postclypeus: length 0.15-0.23; width 0.40-0.46. Pronotum: length 0.20; width 0.50-0.55. Abdomen: length 2.15-2.70; width 0.90-1.20.

Type Material: ARGENTINA. Province of Chaco: Lapachito (type locality), 18.XII.2000, M. O. Arbino col., type colony number LRFC 3984 (holotype soldier and one paratype worker) and FACENAC 1645 (two paratype workers, of which one was dissected for the gut study); Villa Angela 19.XII.2000, E. Laffont col., number FACENAC 1646 (one paratype soldier).

Comparisons: The soldier of the new species is easily distinguished from that of *O. brevicorniger* (Figs. 15-17), whose soldier has a darker and smaller head capsule, lacks the pimple-like frontal blobs and the wrinkles on the frontal integument, has a less inclined postclypeus (only 30°) and more strongly

curved mandibles. The worker of *O. brevicorniger* is larger, a little darker and its head is largest anteriorly and thus somewhat trapezoidal in dorsal view.

Onkotermes brevicorniger (Silvestri 1901)
Figs. 15-17

Examined material: ARGENTINA. Samples in LRFC and were collected by the author. Province of Cordoba: Cosquín, 11.XII.1996, nr. 1789 and 1790 (workers); 12.XII.1996, nr. 1791 (workers); Capilla de Monte, 12.XII.1996, nr. 1792 and 1793 (workers). Province of Catamarca: Los Varela, 15.XII.1996, nr. 1779 (2 soldiers; workers), 1781 and 1782 (workers). Province of Tucumán: Quilmes, 17.XII.1996, nr. 1795 and 1796 (workers).

Distribution and biological notes: Both species are known only from Argentina (Table 1; Fig. 28).

Onkotermes corochus

Distribution: *Onkotermes corochus* occurs in the Chacoan Phytogeographical Region, which is a large domain extending from the south of Bolivia through the west of Paraguay and occupying a broad extension from the north to the middle of Argentina, from the Province of Salta to San Luis, in plain and low mountain lands. The dominant vegetation is xerophytic deciduous forest, with abundance of the hardwood "quebrachos" (species of *Schinopsis*, the "quebracho-colorado", and *Aspidosperma quebracho-blanco*, the "quebracho-blanco"), among many other trees, palms, land bromeliads and cactus, that alternate forests with halophilic steppes of grasses.

The species inhabits the Oriental District or Humid Chaco of the Chacoan Phytogeographical Region (Cabrera 1976; Cabrera & Willink 1980; Morrone 2001). This District occupies the east half of the Provinces of Formosa and Chaco, the north of Santa Fe and the northwest of Corrientes. It constitutes an extensive plain, with a gentle west-east slope and irregular local topography due to morphological processes of fluvial origin (Ginzburg & Adamoli 2006). The soils are generally formed by fine materials (sand, slimes and clays; Cabrera 1976). The climate is tempered humid and the annual mean temperature is 22ºC. Rainfall varies from 500 to 1200 mm and is abundant in the warm season. The most important floristic community is the "quebrachal" or "monte fuerte," semixerophytic with a prevalence of *Schinopsis balansae*,

accompanied by smaller trees, such as *Aspidosperma quebracho-blanco*, *Caesalpinia paraguariensis*, *Prosopis alba*, *Prosopis nigra*, *Ziziphus mistol* and *Geoffroea decorticans*, among many other species (Cabrera 1976). The natural xeromorphic vegetation of the Oriental District is being rapidly degraded due to timber extraction, advance of pastures and agricultural areas, and erosion and salinization of the exposed soil.

Habits: *Onkotermes corochus* feeds on organic remains in the soil and perhaps directly on soil rich in organic matter. At Lapachito, the specimens were found inside and under dry bovine dung and in diffuse galleries in the soil below 5 cm of depth, in an area of Chaco forest strongly degraded due to timber extraction and cattle activity. At Villa Angela, a single soldier was collected a few centimeters below the soil surface in a public park, near an *Eucalyptus* tree. The nest remains unknown and is most probably subterranean.

Onkotermes brevicorniger

Distribution: The distribution of *Onkotermes brevicorniger* in Argentina (Silvestri 1903; Constantino *et al*. 2002; Roisin & Leponce 2004; Torales *et al.* 2005; present paper) corresponds mainly to the Monte Phytogeographical Region, one of the most arid regions in the country. The "Monte" (Cabrera & Willink 1980) occupies a large extension from 27º to 44º S, in the highlands of the mountains that run parallel to the Andean Cordillera from the northeast of the Province of Salta, to the south until the northeast of the Province of Chubut. The climate is dry and warm and the annual mean temperature is 13-15.5ºC. Rainfall varies from 80 to 250 mm. It is an arid region with a prevalence of xerophytic plants, represented mainly by *Larrea*, *Bulnesia* and *Plectrocarpa* associated with *Prosopis* bushes.The landscape is dominated by heath ("matorral"), commonly from one to two meters high but sometimes higher, which in more arid areas is very open and represented by xerophytic steppes with low sparse bushes and whitish arenous nude soil largely exposed to sunlight.

The southern localities are also an extension of the Monte Region. Even the localities on the east coast at the "Península de Valdes", according to Roig (1998; Province of Chubut Fig. 28, nr. 18-20) correspond to a transition or Monte-Patagonian Southern District (localities nr. 18 and 20) and Shrubby-Atlantic District (nr. 19), where the flora of the "Monte" interfaces with elements of the Patagonian and Patagonian-Pampean domains, respectively.

Table 1. Collection sites of *Onkotermes* species in Argentina and reference papers.

Province	Locality	Latitude	Longitude	Reference
Formosa	1) Parque Nacional Río Pilcomayo	25º 03' S	58º 08' W	Roisin & Leponce 2004
Chaco	2) Lapachito	27º 10' S	59º 23' W	Present paper *
	3) Villa Angela	27º 35' S	60º 43' W	
Santiago del Estero	4) Parque Nacional Copo	25º 41' S	61º 44' W	Cuezzo 2005
Tucumán	5) Quilmes	26º 30' S	66º 00' W	Torales *et al*. 2005
Catamarca	6) Los Varela	27º 56' S	65º 52' W	Torales *et al*. 2005
Córdoba	7) Capilla del Monte	30º 52' S	64º 33' W	Torales *et al*. 2005
	8) Cosquín	31º 14' S	64º 27' W	Silvestri 1903; Torales *et al*. 2005
San Luis	9) San Luis	33º 19' S	66º 21' W	Silvestri 1903
La Pampa	10) Algarrobo del Aguila	36º 25' S	67º 10' W	Torales *et al*. 2005
	11) Colonia 25 de Mayo	37º 38' S	67º 45' W	
Neuquén	12) Planicie Banderita	38º 29' S	68º 25' W	Constantino *et al*. 2002
	13) Añelo (lago Marimenucos)	38º 34' S	68º 32' W	Torales *et al*. 2005
	14) Piedra del Águila	40º 03' S	70º 05' W	
Río Negro	15) Cipoletti	38º 56' S	67º 59' W	Constantino *et al*. 2002
	16) Río Colorado	39º 11' S	64º 24' W	Torales *et al*. 2005
	17) San Antonio Oeste	40º 31' S	64º 31' W	
Chubut	18) Puerto Madryn	42º 47' S	65º 02' W	Torales *et al*. 2005
	19) Puerto Pirámides	42º 35' S	64º 17' W	Silvestri 1903
	20) Gaiman	43º 17' S	65º 29' W	Torales *et al*. 2005

One locality was registered in the Western Chacoan District (Cuezzo 2005), at the Copo National Park (Copo Department, Province of Santiago del Estero), where the specimens were collected in galleries in the soil. In this District, the vegetation is "dry-chaco", constituted of dense xerophytic low forests and halophilic steppes and savannas (produced by fire and wood exploitation; Gimenez & Moglia 2003) present in the drier areas of the Chaco Domain.

Habits: Our samples (numbers refer to LRFC) were collected at places with different landscapes in the arid "Monte" region, where the termites feed on plant remains in the soil, rotten wood and perhaps directly on soil rich in organic matter. In the outskirts of the city of Cosquín, the termites were found in galleries in the soil below rocks in arid and low shrubby vegetation; a species of *Aparatermes* was collected with sample nr. 1791. In the urban region of Cosquín, termites were common under stones and under the rotten bark of living tree trunks in a well-shaded urban forest, whose soil was covered with grass. In a slope inside a particular property; sample nr. 1789 was collected inside the exposed rotten wood at the base of the trunk of a large living tree (basal diameter about 40 cm), as high as 40 cm and also inhabited by a colony

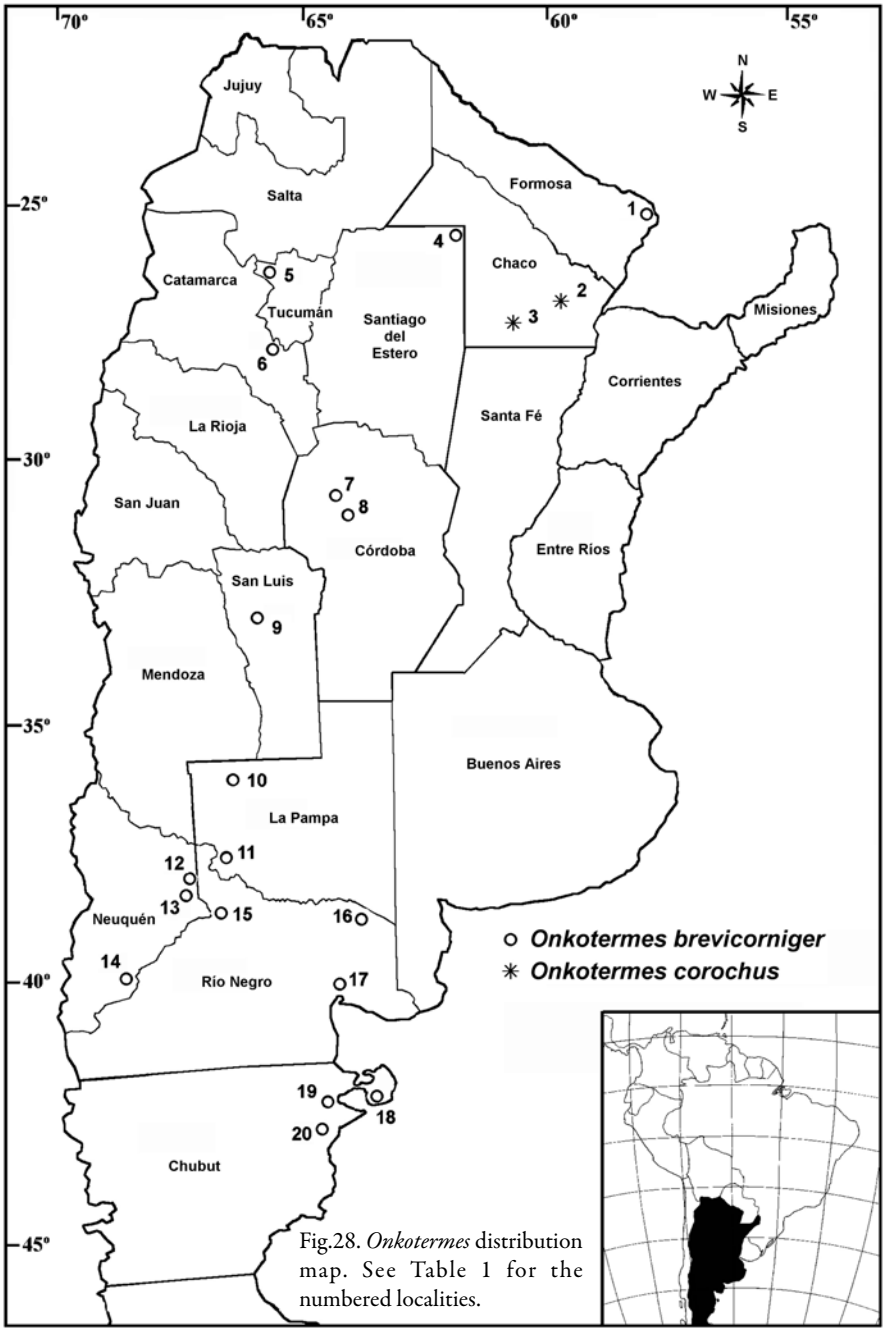


Fig.28. *Onkotermes* distribution map. See Table 1 for the numbered localities.

of *Rugitermes occidentalis* (Silvestri 1901). In Los Varela, the termites were found inside cow dung and in galleries in the soil beneath it, in a pasture on the very high top of rocky massif, fustigated by constant wind (the zone of Los Varela is a transition between the Monte and the Yungas Phytogeographical Regions, but the collections were made in the Monte region). In Capilla del Monte, the termites were found under stones in a rocky region with sparse xerophytic vegetation, either in areas with dark soil (sample nr. 1792) or whitish sandy soil (sample nr. 1793); the last sample was found under a stone also explored by a species of *Aparatermes*. In Quilmes they were collected in rotten wood, partially buried in the organically rich sandy soil of a xerophytic forest about 3 meters high.

The consumption of bovine dung was previously pointed out by Silvestri (1903) and Constantino *et al.* (2002) and we remark that this substrate probably acts as a "natural bait" and greatly favors the collection of the termites in the arid zones where they lives, most without any other favorable collecting places available at the soil surface. Despite the abundance of termites in bovine cattle dung, however, soldiers are very rare: we only obtained two soldiers among hundreds of foraging workers collected in Los Varela. In the absence of soldiers, workers can be easily identified to genus under low magnification, by the typical coiling of the gut, visible by virtue of the transparency of the abdominal integument. Inside cow dung, the termites excavate large chambers, partially filled with earth material, and they move relatively quickly. The nest is surely subterranean and remains undiscovered.

In spite of the rarity of samples in museum collections, *O. brevicorniger* seems to be very common and a prominent species in the soil biocoenosis of the Argentinian arid zones. In the "Monte" arid region, a species of *Aparatermes* is also common in the soil, and a species of *Termes* and of *Anoplotermes* are also present. In the dead trunks and brushes, we found *Rugitermes occidentalis*. The first register of *O. brevicorniger* in an urban area is from the city of Cosquín (sample nr. 1789 and several uncollected colonies in other large trees), where it was common in the base of large living trunks and certainly remains in the anthropically modified area as a component of the urban soil biocoenosis.

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